The Athletic Trainer's Role in Modifying Nutritional Behaviors of Adolescent Athletes: Putting Theory into Practice

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ABSTRACT: Nutritional practices influence athletic performance and recovery from injury. The athletic trainer is ideally positioned to effect dietary changes with adolescent athletes—a group at high-risk for nutritional imbalances. Research shows that young adults generally do not change dietary practices when given factual nutrition and health information. This article provides a variety of behavior change strategies, based on models derived from health education and health psychology, which are likely to influence dietary choices. Promoting self-efficacy by enhancing perception of choice and control, peer modeling, cooperative support networks, goal-setting techniques, and behavioral self-monitoring may provide the motivational framework necessary to enhance dietary compliance. Dietary behavior change techniques are a valuable part of an athletic trainer's resources.

Encouraging high school athletes to eat well is a challenge for athletic trainers, because improvements of dietary behavior really are the only means to enhance nutritional status. Athletic trainers know the value of optimal nutrition in sports performance and rehabilitation, and may wish to add new skills to help athletes change their dietary behaviors. After briefly reviewing the context of nutrition for young athletes, this article provides a theoretical basis and practical suggestions for incorporating nutrition education and dietary behavior change into a comprehensive training program.

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Nutrition Issues for Athletes and Athletic Trainers

Making dietary choices consistent with optimal physical and mental performance is an integral part of an athlete's training program. The impact of nutrition on athletic performance is significant during adolescence, because physiological and biochemical systems have not yet fully matured and the need for exogenous support of growing tissue is greater than in adulthood. Unfortunately, most young athletes regularly make poor nutritional choices. Athletic trainers can provide young athletes with the needed evidence of enhanced performance and recovery from injury that is attainable through a well-chosen nutritional program. They also can motivate them to incorporate good nutrition into their overall training program.

Adolescent athletes may risk their nutrition and health status due to poor dietary practices, inadequate nutrition knowledge, frequent intake of inappropriate dietary supplements, and a propensity to follow dietary fads (12, 24). At the high school level, the typical male athlete eats a great deal of food while many female athletes eat too little. Even when sufficient calories are consumed, diets may be marginally deficient in micronutrients such as iron (27), magnesium (11), and zinc (16), which are essential to perform optimally in sport or to support normal physical development.

In several male-dominated sports, weight manipulation has been associated with nonrecommended dietary practices, such as rapid weight loss used in wrestling, and for substantially increased body mass in football (1). The female athlete whose caloric intake is below her caloric expenditure is typically suffering from the social pressures that promote women to diet and exercise compulsively in an attempt to conform to an unrealistic standard of slenderness (10). Coaches may exacerbate this dieting pressure by urging young women and men to achieve a target body weight inconsistent with normal growth and development, which ignores their genetically endowed body type. An additional factor that may enhance an adolescent's drive toward thinness is the perceived benefit of competing in a sport where weight may be a disadvantage (eg, distance running, gymnastics, swimming, diving, wrestling, cheer-leading). The combination of high physical demands and dietary restrictions places many female and male athletes at great risk of nutritional deficiencies and the possibility of developing an eating disorder (10).

An athlete's beliefs about his or her body can also motivate his or her behavior. A positive body image can build self-esteem and help an athlete achieve goals consistent with optimal sports performance and a healthy lifestyle. On the other hand, body image dissatisfaction or a negative body image can lead to self-destructive behaviors (20). Body image is an intense emotional issue with many high school athletes, especially girls. How they see themselves and how they think others see them profoundly influence their nutritional choices.

Adolescents are at nutritional risk because of both physiological and psychosocial influences (30). Dramatic increases in physical growth and development create a high demand for vitamins, minerals, protein, and energy. Psychosocial changes such as the search for independence and

identity, concern for appearance, and active lifestyles can have a strong impact on nutrient intake. Highly nutritious meals and snacks may be secondary considerations, because teenagers tend to base their food choices on convenience, taste, affordability, time, and peer influence (8, 19, 22, 23) rather than on exercise and recovery needs.

Nutritional choices of high school athletes may be affected by a concern for body image (10). Adolescents at this age often feel a need to maintain a particular social image, which could translate nutritionally into the foods they eat in front of their peers (12). Many may believe it is inappropriate or embarrassing to eat carrot sticks or pears in the presence of friends and teammates. Athletes may perceive that eating a bag of chips or cookies could bring much more popularity than eating salads or fresh fruit.

One way athletic trainers can help male athletes find a healthful balance in the foods they eat is to promote the act of sharing snacks. Sharing a submarine sandwich cut into one- or two-inch individual servings, a bunch of grapes or other popular fruit, or a bag of bagels, are all possible health- and performance-enhancing behaviors that athletic trainers can promote. Young male athletes can discover that they are able to eat healthfully, be popular, and maintain a strong image all at the same time.

Many adolescent athletes have been informed about good health and nutrition practices from teachers, nurses, and coaches (2, 30), as well as from numerous articles in reputable popular magazines (29,30). However, knowledge alone is rarely sufficient to promote behavior change, and a discrepancy between teenagers' health knowledge and their behavior has been frequently noted (6,21,26). Although adolescents may be generally well-informed about good health practices, this knowledge often is poorly translated into their daily lives (30). Rather than focusing nutrition education programs solely on food facts and knowledge, educators and athletic trainers must address the additional factors of attitudes and values to help create the desired outcome of motivation and dietary behavior change (7).

People change their health behaviors when they perceive a reason for the change or when they know that the change will make a positive difference in their lives (9, 15). Among the potential benefits resulting from optimal food choices are an increase in the level of athletic performance, a decrease in healing time after injury, a greater assurance of optimal physical development, an increase in the athlete's self-concept, and the establishment of long-term eating patterns that will likely contribute to robust health later in life.

Self-Efficacy

A theoretical rationale for identifying goals, outcomes, or expectations is based on self-efficacy theory (15). Self-efficacy is a situation-specific form of self-confidence, or the belief that one is competent and can do whatever needs to be done in a specific situation (14). This sense of "I can do" refers to a personal judgment of how well one can organize and implement patterns of behavior in situations that may contain certain novel, unpredictable, or stressful elements (3). Bandura (5) has suggested four sources of self-efficacy attainment for behavior change, which form a model, in part, for the ideas presented in this paper. Self-efficacy can be achieved through the following four methods:

1. Guided practice of the desired behavior (enactive attainment through skill mastery)
2. Vicarious experiences of success (modeling of peers, athletic trainers, and significant others, and reflecting on past successes)
3. Social persuasion (bulletin boards, sharing of ideas and menus, rewards, involvement of the family and coaches in the social support network, and testimonials of success), and
4. Ability to monitor physiological changes (increase positive behavioral cues, decrease negative cues, active role-playing of desired behavior in difficult situations, goal-setting, and behavioral self-monitoring)

Social learning theory, used in relation to self-efficacy, suggests that a person's learning and social experiences, coupled with his or her values and expectations, influence behavior (1, 4, 31). Social learning theorists contend that adolescents will model behavior according to three things: (1) the reactions they receive from others, (2) the behavior of those adults with whom they are in close contact, and (3) the behavior they view on TV and in movies (31). Adolescents particularly are more likely to model what they see, rather than what they hear people say. Therefore, seeing other important people, such as parents, coaches, teammates, and athletic trainers eating well and talking about the value of nutrition and sports performance is likely to influence the young athlete (25).

Enhancing Perception of Choice and Control

A perceived sense of control may be one of the most important elements influencing an adolescent's food choices. Perception of control, or the belief that one can exercise personal choice (21), creates a sense of competence, usefulness, and purpose. At their critical stage of psychological development, adolescents begin to experience a sense of freedom and personal selection regarding lifestyle choices (18). By enhancing a perception of control, the athletic trainer assists in the athlete's personal development. Linking perception of control with health-promoting dietary choices is a skill that may be viewed as part of the athletic trainer's equipment. Enhanced perception of choice and control can be achieved through a positive context of nutrition education, peer modeling, advice by role models, the observation of behaviors of significant others, marketing and advertising messages, goal-setting, and the voicing of a commitment.

A Positive Context for Nutrition Education

Nutrition education that employs a positive context to promote healthful eating is likely to be more useful than a program that uses a fear-based warning approach (24). People react to positive messages much better than to negative ones. An athletic trainer has a better chance of influencing an athlete's nutritional behavior by emphasizing the relationship between optimal nutrition and the athlete's performance and recovery, rather than by instilling guilt and fear with warnings about what to avoid (19). Continually promoting "what to do" and diminishing dialogue about "what not to do" will help young athletes learn an optimistic approach to nutrition (28). Emphasizing immediate or short-term benefits also is more likely to be effective than simply linking the nutrition message with some distant view that one will "feel better."

Increasing perception of choice also will help ensure success. An adolescent who is told what nutritional changes to make will not respond as well as an athlete who is given a number of options that would result in positive change. Encouraging young athletes to choose their own dietary goals and practices increases their sense of ownership and responsibility for their dietary choices. The athletic trainer will have greater success if the athlete is presented

with a number of nutritional options, all of which would be beneficial, rather than prescribing one specific dietary change. For example, the athletic trainer could identify three options, such as increasing complex carbohydrate intake, consuming more vitamin C-rich fruits and vegetables, or drinking more water. Then, let the athlete choose which of the three goals to concentrate on first.

Peer Modeling

Peer modeling is another effective method of enhancing perception of choice and control. Students are more responsive to the influence of peers who share similar values and interests than to the influence of students with dissimilar values (13). In the high school setting, athletes often eat what their peers eat. If the athletic trainer can influence the "leaders" on the team to eat more nutritionally, other athletes are more likely to follow the example being set.

The advice and behavior of others—such as personal friends and authority figures such as coaches, teachers, parents, older siblings, and accomplished athletes—are significant factors influencing people to make favorable dietary behavior changes (9). The behavioral intention model (1) suggests that people's perceptions of the attitudes of "important others," toward a given behavior or set of behaviors, are important influences of their own behavior. Perceptions can be derived from the observation of actions and the acquisition of knowledge from influential persons. In most cases the athletic trainer is a friend as well as an authority figure, and has a regular influence on athletes. To function as an effective role model, the athletic trainer must be knowledgeable and feel comfortable with presenting nutrition information to athletes. In addition, the athletic trainer must practice the desired behaviors that he or she hopes will be adopted by the athletes (23). In a more figurative manner, athletic trainers and health educators are encouraged to follow the words of Gandhi: "We must be the change we wish to see in the world."

A Cooperative Systems Approach

In addition to modeling health-promoting eating behavior and influencing the nutritional practices of key opinion-leader teammates, the athletic trainer can incorporate the athletes' coaches and parents into nutrition education programs. A cooperative systems approach, as shown in Figure 1, is one way to illustrate the dynamic interactions of people who can influence adolescent athletes' food choices on a daily basis. Coaches, parents, and other family members are important components of the student's support network and can be actively encouraged to participate in a systemic effort.

Marketing Nutrition to Athletes

Marketing and advertising messages appear to have a strong influence on teenagers' nutritional behaviors (8, 9). Adolescents model the behaviors of "star athletes," and advertisers capitalize on this notion by hiring sports heros to sell athletic shoes, breakfast cereals, soft drinks, and a multitude of other products. Athletic trainers can use marketing strategies in similar ways. For example, a bulletin board in the training room that displays motivating nutritional messages, along with pictures of well-known athletes, can provide an excellent educational format. The athletic trainer can provide a "nutrition message of the week," which athletes will see on the bulletin board, along with pictures of star athletes, when they come to the training room.

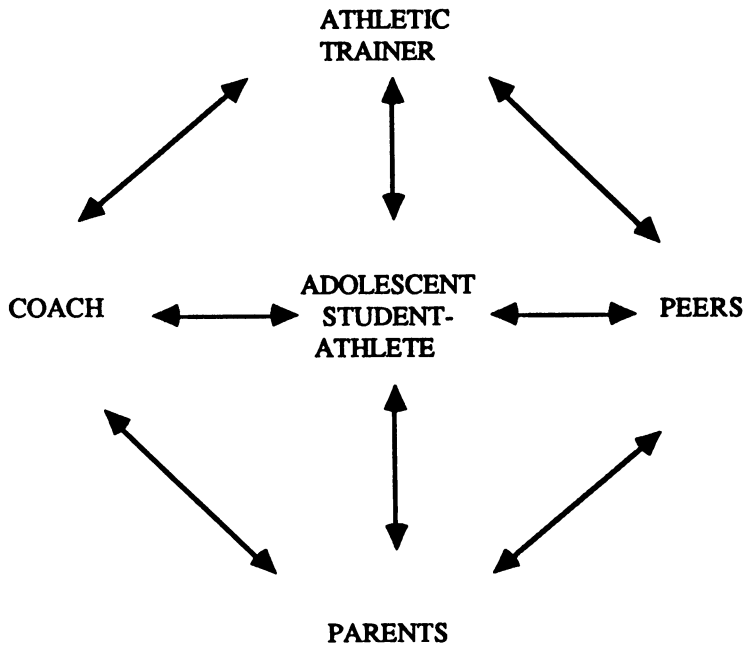


Fig 1.—A cooperative systems approach that can influence dietary choices of adolescent athletes

The systems approach can be consciously encouraged by athletic trainers in a variety of ways. The athletic trainer is in a unique position to invite the parents and coaches to attend sports nutrition workshops with athletes. Coaches, parents, and other family members may be encouraged to participate in joint nutrition goal-setting activities. Discussion among parents, athletes, and coaches concerning how they may support the athlete in attaining his or her nutrition goals can be facilitated at school meetings or potluck dinners that are sponsored by the athletic trainer, coach, or principal.

Awards can be offered by the athletic trainer to family and team members who submit recipes, such as for the "tasty-carbo-quick-meal-of-the-week" competition or for the "low-fat, fruit-based dessert" contest, or even to each team member who meets his or her nutrition goals. Credit can be given to athletes who try a new carbohydrate snack or substitute carbohydrates in place of high-fat foods. Public sharing of ideas and promotion of efforts to try new foods or eating behaviors stimulates social support and self-efficacy in the young athlete.

A factor analysis of messages that students found motivating toward changes in nutritional behaviors has been conducted (24). The findings may be useful when designing bulletin boards. The most powerful messages for students were:

1. Watermelon, peaches, pineapple, apples.... You can add lots of variety to what you eat by choosing REFRESHING FRUIT.

2. Fruit makes such a delicious dessert. It does not leave you with that heavy, stuffed feeling.
3. Fruit makes a refreshing dessert. A bowl of plain sliced peaches and bananas has only about 75 calories and is so enjoyable.
4. You can eat a LOT of fruit before the calories amount to much, because fruit is so low in calories.
5. Choose an apple, an orange, or a banana for your sack lunch dessert. Fruit provides 50-150 calories, compared to 350 calories in two oatmeal cookies.
6. Do you get in a rut when you eat? Add interest by choosing a crisp, refreshing VEGETABLE SALAD often.
7. Drink water with your meals instead of punch, unless you need extra calories.
8. What to drink? Water is an excellent as a no-calorie beverage.
9. Compare a banana (about 130 calories) to a piece of cake (about 300 calories). Choose the dessert that fits YOUR calorie budget.
10. Fruit juice — such a refreshing AND nutritious drink!
11. Fruits and vegetables are important — eat four or more each day.

Goal Setting

Setting goals is one of the most effective methods that athletic trainers can employ to help young athletes eat well. The most important element of goal setting is the focus on desired behaviors rather than on the problem. A simple five-step method of setting goals includes these elements:

1. Establish a positive, quantifiable goal.
2. Identify behaviors to achieve the goal.
3. Identify support person(s).
4. Establish an initial action plan.
5. Identify reward.

Behavioral goals generally are recommended over outcome goals, because a person has control over his or her behavior. For example, an athlete generally has control over eating a daily low-fat diet consisting of six to ten servings of carbohydrates, four servings of vegetables, four servings of fruits, two servings of lean protein, two to three servings of calcium-rich foods, and eight glasses of water. In contrast, the athlete may not have control over whether his or her body loses ten pounds of fat or gains ten pounds of muscle, since the amount and rate of gain in lean body mass is subject to genetic and developmental limits, regardless of diet. Therefore, goals that focus on changes in body composition generally are not recommended. Athletes are outcome-oriented, so athletic trainers can link behavioral goals with outcomes and still encourage the focus on behaviors. To operationalize the goal-setting method, a sample worksheet is provided in Figure 2.

1. My one week nutritional goal is:

2. Five or more ways I will achieve my goal are:

3. Whom will I ask to help me? What will I ask of this person?

4. My first step, in the next two days, will be to:

5. At the end of the week, I will reward myself by:

Fig 2.—A sample goal-setting sheet to help encourage positive dietary behavior change

Goals are most effective when set in a positive, measurable context. The athlete must be able to measure and record targeted behaviors. The use of positive statements helps to create a series of internal images and memories, which assist in achieving the goal. When presented with a negative goal-setting statement, the athlete's mind may create images inconsistent with the desired behavior change. For example, if a teenager is told not to think about eating chocolate cake, his or her mind recalls chocolate cake and has difficulty moving past this image. An alternate approach would have the athlete focus on the energy benefits of eating at least five servings of pasta each week and setting that as a goal. The mind easily forms images of mounds of spaghetti noodles served with low-fat tomato marinara sauce.

Quantifying goals into behavioral terms is essential to provide structure and refinement toward the dietary changes. After appropriately identifying a goal, the athlete is asked to identify specific actions that will be taken to achieve the goal. Strategies might include buying the necessary foods, packing snacks for use before and after a workout, or writing the goal on a card and placing the card in one's locker, notebook, or on the bathroom mirror.

The third step towards successful goal attainment is to identify a support person—thus establishing a social support network. In addition, the athlete must be able to communicate clearly what specific actions he or she would like their support person to take. A teammate, friend, or athletic trainer may be an ideal support person to provide a listening ear, a supportive face, and words of encouragement.

Identifying an action to be taken during the first 3 days of the goal period is the next step. Breaking large behavioral goals into smaller tasks maximizes achievable outcomes. Secondly, the success of a first step, however small, establishes a positive mode and reinforces the athlete to continue toward the larger goal.

The fifth step in the goal-setting process is to identify a reward. Rewards are important because they reinforce the series of actions and attitudes that resulted in reaching the athlete's goals. Rewards are most effective when consistent with the behavioral goal. For example, a chocolate sundae is not the best reward for eating three servings of vegetables each day. Rewards can include the purchase of non-food items such as books, a new piece of clothing or music, bedroom accessories, tickets to sports or entertainment events, or activities such as outings, video- or movie-watching, picnics, social events, or games.

The sample goal-setting sheet in Figure 2 incorporates a 1-week time frame. Longer times, such as 2, 3, or 4 weeks also can be used effectively, particularly after the athlete and athletic trainer have established familiarity with the process. Goals spanning more than 4 weeks are generally less effective than short-term goals, because focus and motivation tend to wane as time passes. Goal attainment is enhanced when goals are both written and verbalized to individuals in the athlete's social support network.

Behavioral Self-Monitoring

A dietary checksheet is a useful tool to promote healthy food choices in a positive, intentional context. A written or graphic

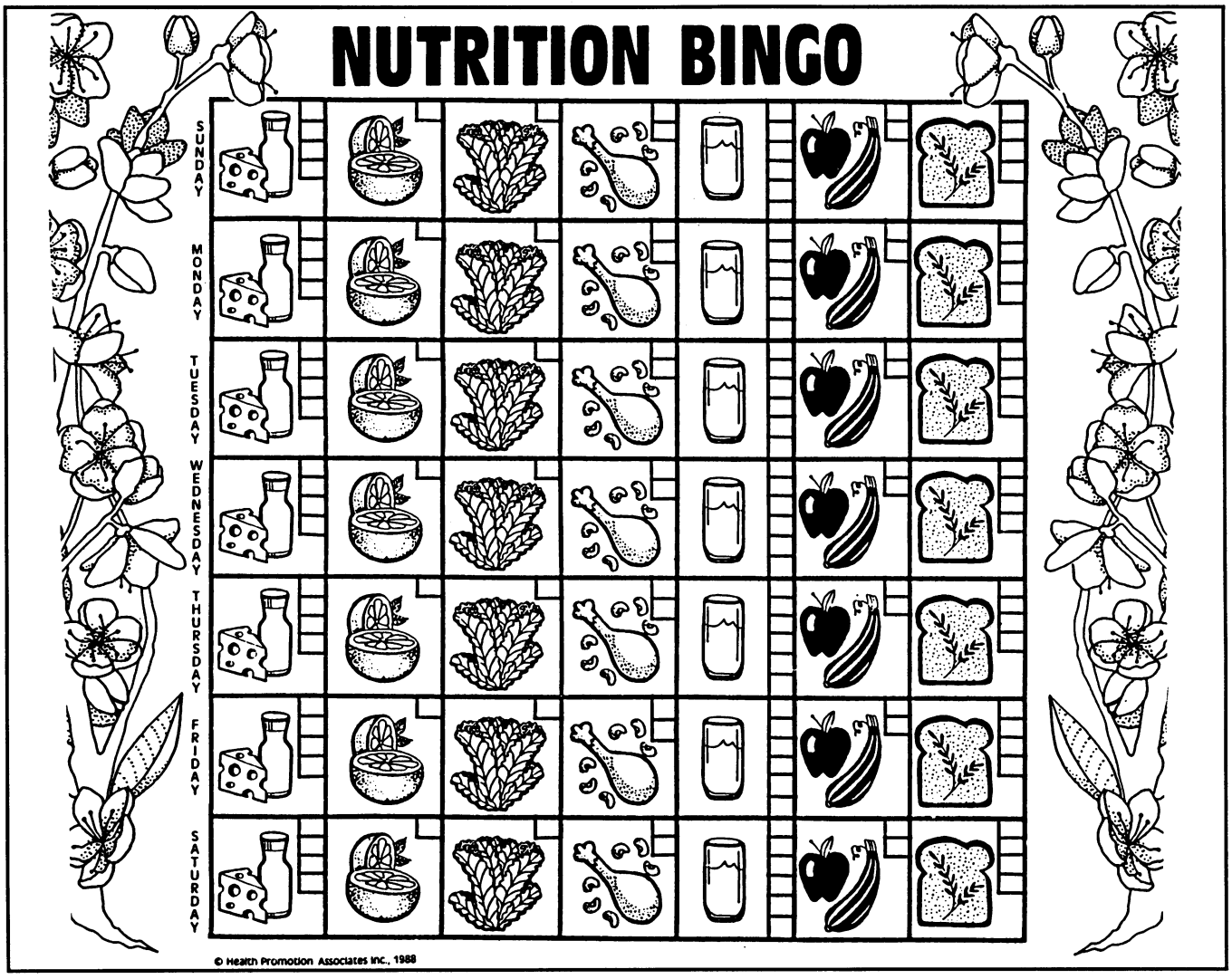


Fig 3.—Sample "Nutrition Bingo" behavioral goal record sheet (above) and weekly checklist (facing page)

list of food categories can be presented for each day, with a targeted number of servings from each category being the athlete's goal. For example, a "Nutrition Bingo" system, shown in Figure 3, has been successfully employed to help direct people toward dietary goals (17). The weekly sheet displays graphic images of foods representing categories such as whole grains, fruits, vegetables, water, dairy products, and lean meats/dried beans with a suggested number of daily servings. An athletic trainer could devise a similar checksheet and distribute copies directly to athletes, or provide the sheets to coaches for use with a team. When the checksheet is carried with the athlete, it serves as a reminder and motivator regarding foods to be eaten. When posted on the refrigerator, the sheet can also serve as a focal point for family discussion, social support, and meal planning for the athlete.

Readiness

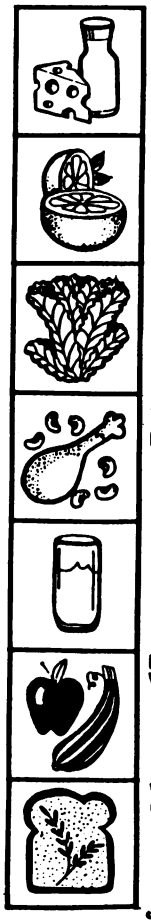
Adolescent athletes must be ready before they can take the necessary steps to change their dietary practices. Readiness is "the possession of behaviors, attitudes, skills, and concomitant resources that make it possible for individuals to incorporate a new health behavior into a permanent lifestyle (15)." A readiness model shows a progression from knowledge gathering and understanding to complete adoption of the new behavior as part of a lifestyle.

Athletic trainers can apply nutrition education principles and research to influence adolescent athletes to make healthy dietary choices. Athletic trainers can educate athletes about nutritional training methods that promote a positive self-concept as well as enhance performance, aid in recovery from injuries, and contribute to overall health. A primary goal of athletes is to participate in their sport in the best physical and mental condition possible. By adding dietary behavior change to the many therapy treatments used, athletic trainers will be helping athletes to reach their personal and athletic goals.

References

1. Ajzen I, Fishbein M. *Understanding Attitudes and Predicting Social Behaviors*. Englewood Cliffs, NJ: Prentice-Hall; 1980: 79-107.
2. Auld GW, Smiciklas-Wright H, Shannon BM. School health interventions for adolescents at nutritional risk: a survey of health teachers, nurses, and coaches. *J Nutr Educ*. 1988; 20:319-325.
3. Bandura A. Cultivating competence, self-efficacy, and intrinsic interest through proximal self-motivation. *J Person Soc Psych*. 1981; 41:586-598.
4. Bandura A. Self-efficacy: toward a unifying theory of behavior change. *Psychol Rev*. 1977; 84:191-215.
5. Bandura A. *Social Learning Theory*. Englewood Cliffs, NJ: Prentice-Hall; 1977:1-247.
6. Brunswick AF. Health needs of adolescents: how the adolescent sees them. *Am J Health*. 1969; 59:1730-1747.

NUTRITION BINGO



DAIRY: One cup lowfat milk or yogurt, 1 1/2 oz. cheese, or one 300 mg calcium supplement. Four servings a day recommended.

VITAMIN C-RICH FOODS: One piece or 1/2 cup juice of grapefruit or tangerine; 1/2 cup melon, strawberries or other berries; or 1 whole green pepper or tomato. One serving a day recommended.

LEAFY GREENS: One cup raw or 1/2 cup cooked or kale, chard, spinach, broccoli, or brussels sprouts; or one cup romaine, or red or green leaf lettuce. One serving a day recommended

DARK MEATS & DRIED BEANS: Three oz. of lean beef, pork, or dark meat from chicken or turkey; or 1 cup cooked beans like pinto beans, black-eyed peas, split peas, or lentils. Two servings a day recommended.

WATER: One cup water or herb tea. Six servings a day recommended.

FRUITS & VEGETABLES: One cup raw or 1/2 cup cooked of any additional fruits or vegetables. Two servings a day recommended.

WHOLE GRAINS: One slice whole-grain bread; 1/2 cup oatmeal, brown rice or other cooked grains; or 3/4 cup ready-to-eat whole-grain cereal. Four servings a day recommended.

TO DO LIST

For my goal this week, I will:

_____

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_____

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_____

I can answer yes to all of these questions about my goal:

☐ 1. Does it say exactly what I will do?

☐ 2. Do I have direct control over it?

☐ 3. Could a friend see me doing it?

☐ 4. Can I tell when I've accomplished it?

☐ 5. Does it say what I will do rather than what I won't do?

☐ 6. Is it easy to do?

The steps I will take to reach my goal are:

_____

_____

_____

_____

_____

7. Carruth BR, Skinner JD. What do we know and what should we do about nutrition education for adolescents? *J Nutr Educ.* 1988; 20: 271-272.
8. Contento IR, Michael JL, Goldberg CJ. Food choice among adolescents: population segmentation by motivations. *J Nutr Educ.* 1988; 20: 289-297.
9. Contento IR, Murphy BM. Psycho-social factors differentiating people who reported making desirable changes in their diets from those who did not. *J Nutr Educ.* 1990; 22: 6-13.
10. Davis C, Cowles M. A comparison of weight and diet concerns and personality factors among female athletes and non-athletes. *J Psychosom Res.* 1989; 33: 527-536.
11. Deuster PA, Dolev E, Kyle S, Anderson RA, Schoomaker EB. Magnesium homeostasis during high-intensity anaerobic exercise in men. *J Appl Physiol.* 1897; 62: 545-550.
12. Douglas PD, Douglas JF. Nutrition knowledge and food practices of high school athletes. *J Am Diet Assoc.* 1984; 84: 1198-1202.
13. Gates G, Kennedy S. Peer educators reach college students with nutrition information. *Coll Health.* 1989; 38: 95-96.
14. Gill DL. *Psychological Dynamics of Sport.* Champaign, Ill: Human Kinetics; 1986: 38-51.
15. Girdano DA, Dusek DE. *Changing Health Behavior.* Scottsdale, Ariz: Gorsuch-Scarisbrick; 1988: 29-37.
16. Hackman RM, Keen CL. Changes in serum zinc and copper levels after zinc supplementation in running and nonrunning men. In: Katch FI, ed. *Sport, Health, and Nutrition, 1984 Olympic Scientific Congress Proceedings.* Champaign, Ill: Human Kinetics; 1986:89-100.
17. Hackman RM, Wagner, E. Nutrition bingo in the senior gardening and nutrition project. *J Nutr Educ.* 1987; 19:224A.
18. Hedin D, Resnick M, Blum R. *Minnesota Youth Poll: Youth's Views on Health, Illness and Medical Care.* St. Paul, Minn: Center for Youth Development Research, Agricultural Experiment Station, University of Minnesota; 1980:1-26.
19. Hochbaum GM. Strategies and their rationale for changing people's eating habits. *J Nutr Educ.* 1981; 13: S59-S65.
20. Hutchinson M: *Transforming Body Image.* Trumansburg, NY: The Crossing Press; 1985:1-170
21. Kanfer FH, Grimm LG. Freedom of choice and behavioral change. *J Consult Clin Psychol.* 1978; 46: 873-878.
22. Lewis CJ, Sims LS, Shannon B. Examination of specific nutrition/health behaviors using a social cognitive model. *J Am Diet Assoc.* 1989; 89:194-202.
23. Lewis M, Brun J, Talmage H, Rasher S. Teenagers and food choices: the impact of nutrition education. *J Nutr Educ.* 1988; 20: 336-339.
24. Neilson JL, Larson-Brown LB. College students' perception of nutrition messages: How motivating are they? *J Nutr Educ.* 1990; 22: 30-34.
25. Parr RB, Porter MA, Hodgson SC. Nutrition knowledge and practice of coaches, trainers and athletes. *Phys Sportsmed.* March 1984; 12: 127-138.
26. Radius SM, Dillman TE, Becker MH. Adolescent perspectives on health and illness. *Adolescence* 1980; 15: 375-383.
27. Smith NJ, Worthington-Roberts B. *Food for Sport.* Palo Alto, Calif: Bull; 1989:101-110.
28. Stensrud RH, Stensrud K. Counseling for health empowerment. *Personnel Guidance* J. 1982; 60: 377-381.
29. Storm J. Nutrition advice to think twice about. *Women's Sports and Fitness.* November, 1989; 11:20.
30. Story M, Resnick M. Adolescents' views on food and nutrition. *J Nutr Educ.* 1886; 18: 188-192.
31. Wallston B, Wallston K. Social psychological models of health behavior: an examination and integration. In: Baum A, Taylor S, Singer JE, eds. *Handbook of Psychology and Health,* IV. Hillside, NJ: Erlbaum; 1984: 23-53.